NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

POND SEALING OR LINING

GLEIZATION

(No.)
CODE 521F CA INTERIM

DEFINITION

Installing a lining of material and treating the soil in a pond mechanically to impede or prevent excessive water loss.

Scope

This standard applies to the sealing of ponds by included gleization. Gleization is a natural, biochemical process that occurs in soils in the presence of organic matter and poor drainage conditions. This practice induces a chemical reaction which reduces permeability.

PURPOSES

To reduce seepage losses in ponds to an acceptable level.

CONDITIONS WHERE PRACTICE APPLIES

Where water loss from a pond through leakage is or will be of such proportion as to prevent the pond from fulfilling its planned purpose, where leakage will damage land or crops, will waste water, or cause environmental problems.

CRITERIA

Ponds to be sealed shall be constructed to meet NRCS Standards for Pond, Irrigation Pit (552A) or Regulating Reservoir (552B), Irrigation Storage Reservoir (436), Pond (378), Waste Treatment Lagoon (359), Waste Storage Facility (313), or Wildlife Watering Facility (648), as appropriate.

Soil Properties

The gleization technique is experimental and can be applied to any type of soil where the depth to rock exceeds 2 1/2 feet. Artificial gleization of soil is induced by covering the surface with a layer of organic matter followed by another layer of soil for protection.

Organic Matter

Any type of fresh or partially decayed organic matter, including livestock manure, straw, grass, leaves, sawdust, etc., can be used. The rate of application of organic matter shall be approximately 6 pounds dry weight per square yard. "Dry weight" shall be the air dried material or its equivalent volume of wet material. This is approximately equivalent to 15 tons per acre. The rate of application in inches can be determined experimentally for the material being used to facilitate control of application rate. The material shall be spread evenly leaving none of the surface uncovered.

Protective Cover

A 6 to 8 inch layer of soil material shall be placed over the organic material. Any convenient method of placement can be used as long as the organic layer is not disrupted. Compaction is not necessary except to help minimize erosion. It may be necessary to seed the area temporarily to prevent excessive erosion.

CONSIDERATIONS

Water Quantity

1. Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation and ground water recharge.

2. Variability of the practice's effects caused by seasonal or climatic changes.

3. Effects on downstream flows or aquifers that would affect other water use or users.

4. Effects on the volume of downstream flow to prohibit undesirable environmental, social, or economic effects.

5. Potential use for water management to conserve water.

Water Quality

1. Effects on the movement of sediment, pathogens, and soluble substances carried by seepage toward the ground water.

2. Effects on the visual quality of the downstream water resources.

3. Short-term and construction related effects of this practice on quality of the local downstream water resources.

4. Effects on the movement of dissolved substances below the pool area and toward ground water.

5. Effects on wetlands or water related wildlife habitats.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for installation of pond sealing or lining-gleization shall be in keeping with this standard and shall describe the requirements for application for the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An operation and maintenance plan must be prepared by the Designer for use by the owner or other responsible for operating this practice. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damage components.